



PowerLogic power-monitoring units

PM700 series power meter



Technical data sheet

2011

Solenvis
experts in energy metering

PM700 series

Functions and characteristics



PowerLogic PM700.

The PowerLogic PM700 series meters offer all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 50 mm behind the mounting surface.

With its large display, you can monitor all three phases and neutral at the same time. The anti-glare display features large 11 mm high characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles.

The PowerLogic PM700 series meters are available in four versions to better fit specific applications:

- PM700, basic metering with THD and min/max readings
- PM700P, same functions as the PM700, plus two solid-state pulse outputs for energy metering
- PM710, same functions as the PM700, plus one RS 485 port for Modbus communication
- PM750, same functions as the PM710, plus two digital inputs, one digital output and alarms.

Applications

- Panel instrumentation.
- Sub-billing and cost allocation.
- Remote monitoring of an electrical installation.
- Harmonic monitoring (THD).
- Alarming with under/over conditions and I/O status (PM750).

Characteristics

Requires only 50 mm behind mounting surface
The PM700 series meters can be mounted on switchboard doors to maximise free space for electrical devices.

Large back lit display with integrated bar charts
Displays 4 measurements at a time for fast readings. Uses only two clips for installation; no tools necessary.

Intuitive use
Easy navigation using context-sensitive menus.

Bar charts
Graphical representation of system loading and Status of Inputs/Outputs (PM750 and PM700P) provide system status at a glance.

Power and current demand, THD and min/max reading in basic version
A high-performance solution for trouble-free monitoring of your electrical installation.

Active energy class IEC 62053-22 class 0.5S (PM750) and IEC 62053-21 class 1 (PM700, PM700P, PM710)
Suitable for sub-billing and cost-allocation applications.

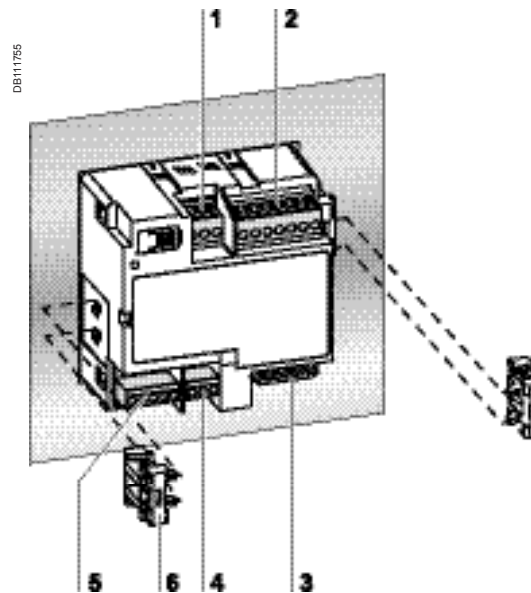
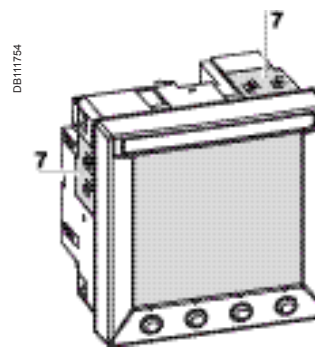
IEC 61557-12 Performance Standard
Meet IEC 61557-12 PMD/S/K55/0.5 (PM750) and IEC61557-12 PMD/S/K55/1 (PM700, PM700P, PM710) requirements for combined Performance Measuring and monitoring Devices (PMD).

Innovative Power Meter
RS 485 communications, alarming and digital I/O in a single Power Meter (PM750).

Part numbers		
Power Meter	Schneider Electric	Square D
PM700 power meter - with basic readings including THD and Min/Max	PM700MG	PM700
PM700P power meter - same as PM700 plus two pulse outputs	PM700PMG	PM700P
PM710 power meter - same as PM700 plus RS 485 port	PM710MG	PM710
PM750 power meter - same as PM700 plus RS 485 port, 2 Digital inputs and 1 Digital output, and alarms	PM750MG	PM750
Parts and accessories		
DIN-rail Mounting Kit	PM72DINRAILKIT	
Set of connectors replacement (PM700, PM700P, PM710)	PM7AND2HWKIT	
Set of connectors replacement (PM750 only)	PM750HWKIT	

PM700 series

Functions and characteristics (cont.)



- PM750.**
- 1 Control power.
 - 2 Voltage inputs.
 - 3 Current inputs.
 - 4 RS 485 port.
 - 5 Digital input/output.
 - 6 Mounting clips.
 - 7 Mounting slot.

Selection guide	PM700	PM700P	PM710	PM750
Performance standard				
IEC 61557-12 PMD/S/K55/1 Requirements for combined Performance Measuring and monitoring Devices (PMD)	■	■	■	-
IEC 61557-12 PMD/S/K55/0.5 Requirements for combined Performance Measuring and monitoring Devices (PMD)	-	-	-	■
General				
Use on LV and HV systems	■	■	■	■
Current accuracy	0.5 %	0.5 %	0.5 %	0.4 %
Voltage accuracy	0.5 %	0.5 %	0.5 %	0.3 %
Active and reactive power accuracy	1.0 %	1.0 %	1.0 %	0.5 %
Active energy accuracy IEC 62053-21	Class 1	Class 1	Class 1	
Active energy accuracy IEC 62053-22				Class 0.5S
Reactive energy accuracy	2 %	2 %	2 %	2 %
Sampling rate (samples/cycle)	32	32	32	32
Instantaneous rms values				
Current Total, Phases and neutral	■	■	■	■
Voltage Total, Ph-Ph and Ph-N	■	■	■	■
Frequency	■	■	■	■
Real and reactive power (1) and apparent power	signed	signed	signed	signed
Power factor Total	signed	signed	signed (2)	signed (2)
Energy values				
Active and reactive energy (1); and apparent energy	signed	signed	signed	signed
Demand values				
Current Present and max. Thermal calculation mode only	■	■	■	■
Active, reactive, apparent power Present and max.	■	■	■	■
Setting of power demand calculation Sliding, fixed and rolling block mode	■	■	■	■
Other measurements				
Hour counter	■	■	■	■
Power quality measurements				
Harmonic distortion Current and voltage	■	■	■	■
Data recording				
Min/max of instantaneous values	■	■	■	■
Alarms	-	-	-	■ (3)
Inputs/Outputs				
Digital inputs	-	-	-	2 (4)
Digital outputs	-	2 (5)	-	1 (6)
Display				
Green backlit LCD display	■	■	■	■
IEC or IEEE visualization mode	■	■	■	■
Communication				
RS 485 port	-	-	■	■
Modbus protocol	-	-	■	■
Firmware update via RS485 serial port	-	-	■	■

(1) Signed real and reactive power and energy. The power meter includes net values only.
 (2) See register 4048. Negative sign "-" indicates lag.
 (3) 15 user-configurable under and over conditions and in combination with digital inputs or output status.
 (4) 2 operation modes are available: normal or input demand synchronisation.
 (5) kWh and kVARh pulse output mode only.
 (6) 3 operation modes are available: external, alarm or kWh pulse output.

PM700 series

Functions and characteristics (cont.)



Rear view of PM750.

Electrical characteristics		
Type of measurement	True rms up to the 15th harmonic on three-phase (3P, 3P + N) two-phase and single-phase AC systems 32 samples per cycle	
Measurement accuracy	Current	± 0.5% from 1A to 6A (PM700, PM700P, PM710) ± 0.4% from 1A to 6A (PM750)
	Voltage	± 0.5% from 50V to 277V (PM700, PM700P, PM710) ± 0.3% from 50V to 277V (PM750)
	Power Factor	± 0.0034, from 1A to 6A and from -0.5 to +0.5
	Power	± 1% (PM700, PM700P, PM710) ± 0.5% (PM750)
	Frequency	± 0.02 Hz from 45 to 65 Hz
	Active Energy	IEC 62053-21 Class 1 ⁽¹⁾ IEC 62053-22 Class 0.5 S ⁽²⁾
	Reactive Energy	IEC 62053-23 Class 2
Data update rate	1 s	
Input-voltage characteristics	Measured voltage	10 to 480 V AC (direct Ph-Ph) 10 to 277 V AC (direct Ph-N) up to 1.6 MV AC (with external VT) the lower limit of the measurement range depends on the PT ratio
	Metering over-range	1.2 Un (20%)
	Impedance	2 MΩ (Ph-Ph) / 1 MΩ (Ph-N)
	Frequency range	45 to 65 Hz
Input-current characteristics	CT ratings	Primary Adjustable from 1 A to 32767 A Secondary 1 A or 5 A
	Measurement input range	5 mA to 6 A
	Permissible overload	15 A continuous, 50 A for 10 seconds per hour, 120 A for 1 second per hour
	Impedance	< 0.12 Ω
	Load	< 0.15 VA
Power supply	AC	100 to 415 ±10 % V AC, 5 VA; 50-60 Hz
	DC	125 to 250 ±20 % V DC, 3 W
	Ride-through time	100 ms at 120 V AC
Input	Digital inputs (PM750)	12 to 36 V DC, 24 V DC nominal, 12 kΩ impedance, 2.5 kV rms isolation, max. frequency 25 Hz, response time 10 ms
Output	Pulse outputs (PM700P)	3 to 240 V DC or 6 to 240 V AC, 100 mA at 25 °C, derate 0.56 mA per °C above 25 °C, 2.41 kV rms isolation, 30 Ω on-resistance at 100 mA
	Digital or pulse output (PM750)	8 to 36 V DC, 24 V DC nominal at 25 °C, 3.0 kV rms isolation, 28 Ω on-resistance at 100 mA
Mechanical characteristics		
Weight	0.37 kg	
IP degree of protection (IEC 60529)	IP52 front display, IP30 meter body	
Dimensions	96 x 96 x 69 mm (meter with display)	
	96 x 96 x 50 mm (behind mounting surface)	
Environmental conditions		
Operating temperature	Meter	-5 °C to +60 °C
	Display	-10 °C to +55 °C
Storage temp.	Meter + display	-40 °C to +85 °C
Humidity rating		5 to 95 % RH at 50 °C (non-condensing)
Pollution degree		2
Metering category		III, for distribution systems up to 277/480 V AC
Dielectric withstand		As per EN 61010, UL508 - Double insulated front panel display
Altitude		3000 m max.
Electromagnetic compatibility		
Electrostatic discharge		Level III (IEC 61000-4-2)
Immunity to radiated fields		Level III (IEC 61000-4-3)
Immunity to fast transients		Level III (IEC 61000-4-4)
Immunity to impulse waves		Level III (IEC 61000-4-5)
Conducted immunity		Level III (IEC 61000-4-6)
Immunity to magnetic fields		Level III (IEC 61000-4-8)
Immunity to voltage dips		Level III (IEC 61000-4-11)
Conducted and radiated emissions		CE commercial environment/FCC part 15 class B EN 55011
Harmonics emissions		IEC 61000-3-2
Flicker emissions		IEC 61000-3-3
⁽¹⁾ PM700, PM700P, PM710.		
⁽²⁾ PM750.		

PM700 series

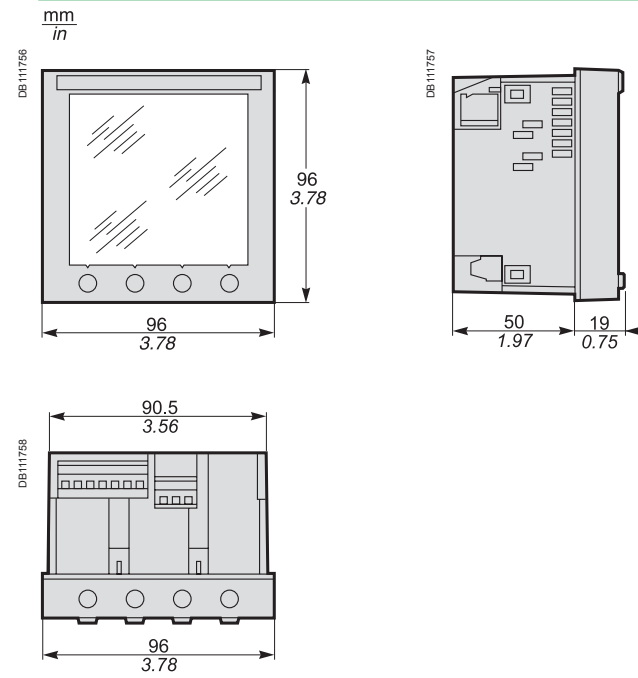
Functions and characteristics (cont.)

Safety	
Europe	CE, as per IEC 61010-1 ⁽¹⁾
U.S. and Canada	cULus (UL508 and CAN/CSA C22.2 No. 14-M95, Industrial Control Equipment)
Communication	
RS 485 port (PM710 and PM750)	2-wire, up to 19200 bauds, Modbus RTU (double insulation)
Display characteristics	
Dimensions 73 x 69 mm	Green back-lit LCD (6 lines total, 4 concurrent values)
⁽¹⁾ Protected throughout by double insulation.	

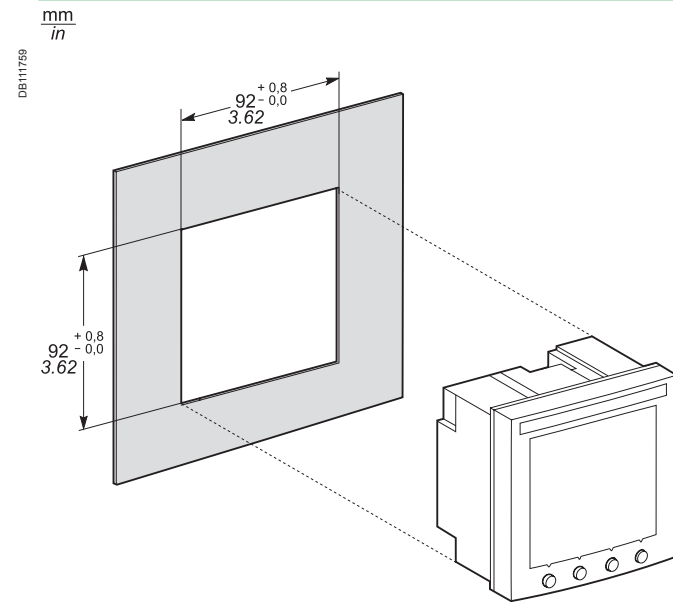
Power Meter Series 700

Installation and connection

Dimensions



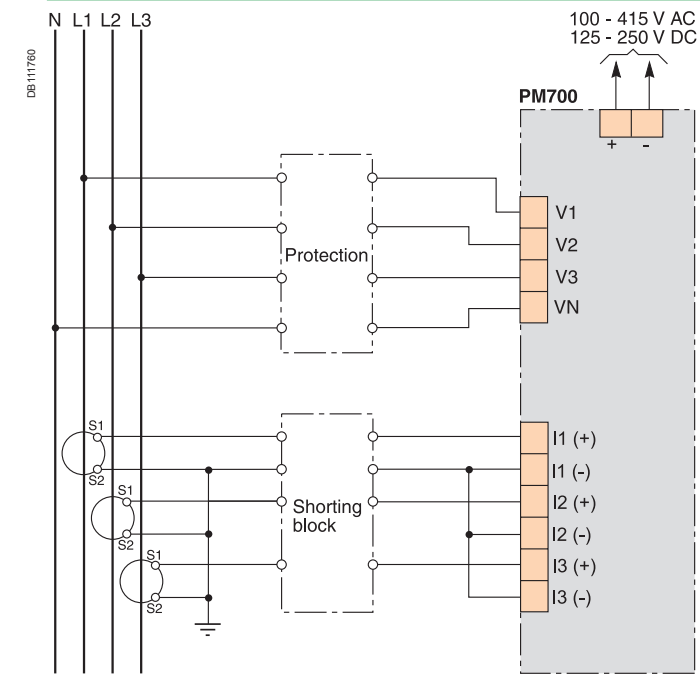
Front-panel mounting



Power Meter Series 700

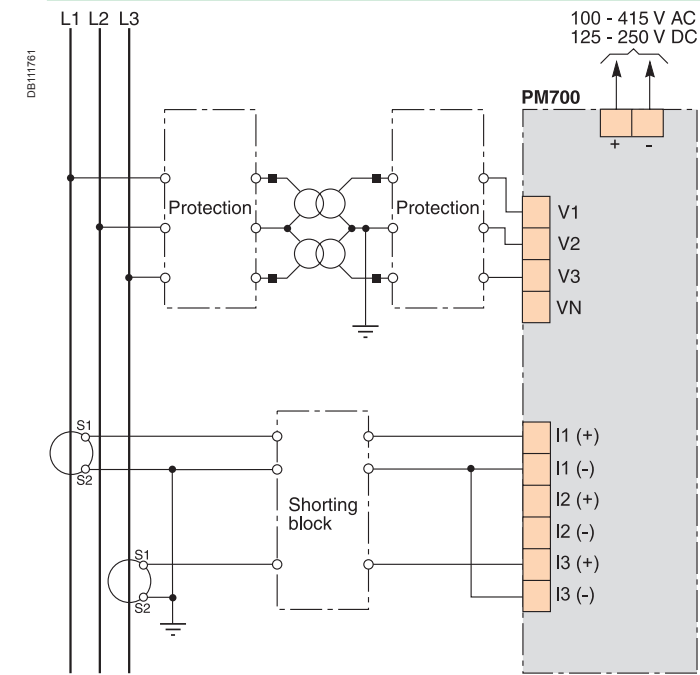
Installation and connection (cont.)

4-wire connection with 3 CTs and no PT



Connection example.

3-wire connection with 2 CTs and 2 PTs



Connection example.

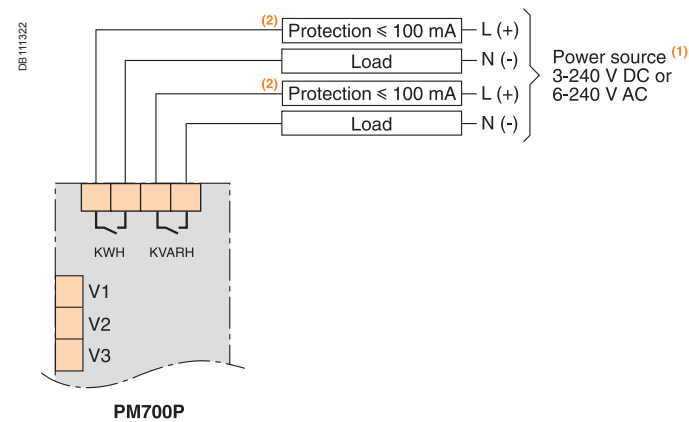
Note: other types of connection are possible. See product documentation.

Power Meter Series 700 Installation and connection (cont.)

PM700P pulse output capabilities

There are two solid-state KY outputs. One is dedicated to kWh and the other to kVARh.

Pulse Output: KY is a solid state pulse output rated for 240 V AC/DC max.

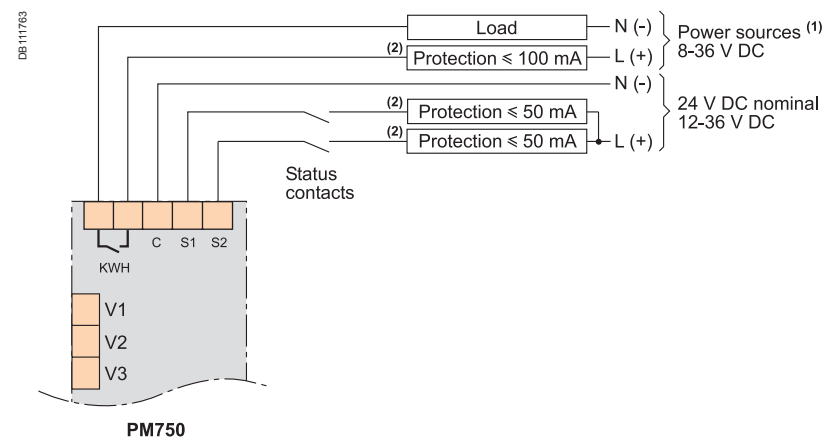


- (1) The power source should not be a safety extra low voltage (SELV) circuit. Pulse outputs are not SELV rated.
 (2) Overcurrent protective device (not supplied). This device must be rated for short circuits at the connection point.

PM750 input/output capabilities

The PM750 has two digital inputs and one digital output. The digital inputs have two operating modes: Normal and Demand Sync.

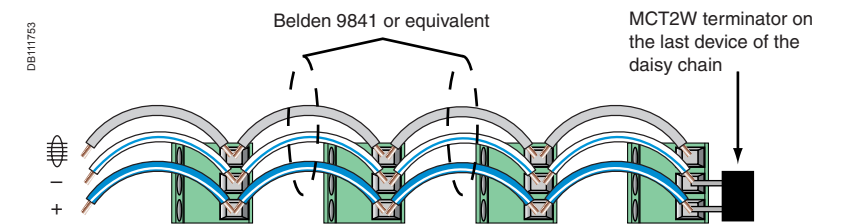
The digital output has three operating modes: External Control (default), Alarm and kWh Pulse mode. When configured in Alarm mode, the digital output can be controlled by the meter in response to an alarm condition.



- (1) The power source should not be a safety extra low voltage (SELV) circuit. Pulse outputs are not SELV rated.
 (2) Overcurrent protective device (not supplied). This device must be rated for short circuits at the connection point.

Power Meter Series 700 Installation and connection (cont.)

Communications (PM710 and PM750) 2-wire daisy-chain connection of devices (RS 485)



Belden 9841 wire colors: blue with white stripe (+), white with blue stripe (-), and silver (shield).

